STAT

Sanitized Copy Approved for Release 2011/09/08 : CIA-RDP80-00809A000700160063-3

STAT

MECHANIZATION OF POLISH COAL MINING

Wegiel, Vol IV, No 12,
Katowice, Dec 1950

Engr Jerzy Rabsztyn

Less than 6 years ago, the Polish coal industry consisted of 80 coal mines. Of this number, 54 mines were large units with a daily maximum potential production of 265,000 tons and reserves for about 100 years, 18 mines were smaller units with maximum potential production 55,000 tons a day, and 8 mines were almost exhausted. These mines were concentrated in two basins: the Gorny Slask Basin with 73 mines, and the Dolny Slask Basin with seven mines of valuable coking coal.

The majority of these mines was not operating when the government took them over. Some of the mine equipment had been destroyed either directly by military operations, or by retreating armies. Mine crews were scattered. Transportation practically did not exist because of the damage done to the railroad lines, the destruction of the bridges, and the removal of rolling stock to Germany. Factories producing machinery were in such poor condition that they could be considered nonexistent. The initial work was inconceivably difficult because of the lack of supplies and equipment. Despite the destruction and difficulties, it was possible to reconstruct the plants at a rapid rate and push production to a tempo never before experienced in Polish industry.

The achievements of the Polish miner were apparent as early as 1945, when he was able to extract almost three fourths of the amount of coal mined in 1938. This was accomplished in spite the lack of equipment and the poor conditions of the mines. In 1946, coal extraction increased 57 percent. By 1947, the coal production figure was double that of 1945. For the first time, in 1948, the prewar production level of all mines now within the Polish coal industry was exceeded by 1.2 percent.

During the Three-Year Plan, the miners extracted 260 million tons of coal, fulfilling the production plan ahead of schedule. In 1949, they produced three times as much coal as in 1945.

Sanitized Copy Approved for Release 2011/09/08 : CIA-RDP80-00809A000700160063-3

STAT

If productivity of the miners was not satisfactory in the first postwar year, it was because of inadequate equipment and inefficient machinery. In 1946, however, productivity increased by 16 percent, and in 1949, when machine construction plants were meeting the requirements of mining more efficiently, productivity increased by 44 percent.

With respect to available coal resources, Poland ranks third in Europe after European USSR and England. The Polish reserves amount to 135 billion tons, reaching to a depth of 1,200 meters. The coal reserves in Poland are greater than in Germany, France, Czechoslovakia, or the other European countries.

Poland occupies an important position with respect to coal extraction. It is in third place in Europe and fifth in the world, following the US, USSR, England, and Germany.

Exports of Polish coal after World War II have increased immeasurably. As early as 1946 the export of Polish coal was 13.5 million tons. During the two following years, this export increased to such an extent that it became an important contribution of Poland toward the reconstruction of Europe.

Polish coal exports played an important part in the European economy. In 1946, deliveries from Poland represented 81 percent of Czechoslovakia's total coal imports, 61 percent of Sweden's, 44 percent of Finland's, 20 percent of Switzerland's, 20 percent of Norway's, and 20 percent of Denmark's. During the years 1947 to 1949, Polish coal exports were further increased to supply the European markets, as well as the markets outside Europe.

Normally, a high percentage of Polish coal has been exported. At present, this proportion is smaller, amounting to about 30 percent of the extracted coal. This is the result of the changing economic structure and the industrial development of People's Poland, although there has been an increase in coal extraction. This means a definite increase in domestic coal consumption as a result of Poland's increased industrialization. Polish consumption of coal per capita will be 3,613 kilograms in 1955 as compared with 1,093 kilograms in 1938.

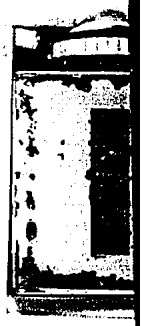
During the Three-Year Plan, the first and most important achievement of the coal industry was the fulfillment of the state plan. This, in turn, made possible the fulfillment of the objectives established for the entire national economy, and placed considerable quantities of foreign exchange at the disposal of the state.

The following are main objectives of the Six-Year Plan for the coal industry: to increase coal extraction by 35 percent (which means a total of 500 million tons during the 6-year period), to increase productivity by 36 percent, to greatly improve the quality of coal, to reconstruct the existing mines, to build eight new mines, and to improve working conditions.

By the application of current labor methods and with the present productivity, amounting to about 1,300 kilograms of coal per man-day, the planned expansion of production by 35 percent during the Six-Year Plan could be achieved by employing 60,000 additional persons. However, the shortage of manpower, as a result of the expansion of other industries, does not allow the coal industry to increase its crews. Thus, the 100-million-ton target for coal extraction in 1955 is based on an increase in productivity, which will be 1,700 kilograms per man-day.

The basis of mining technology is the mechanization of production processes. This mechanization will fulfill the following primary aim: it will substitute the machine for heavy manual labor in the mines and will create, instead of a mine laborer, a mine technician who will service the complicated machinery, making possible the attainment of high productivity with less physical exertion.

STAT



Poland must make up for the many lost years prior to 1945. A scrutiny of some achievements in mechanization by the USSR will show clearly the necessity for a revolutionary change in Polish mining.

In 1949, the degree of mechanization for the basic extraction processes in the USSR amounted to the following: coal cutting, 98.4 percent; pit transportation, 93.0 percent; and loading of coal on railroad cars, 98.9 percent.

The Polish coal industry, in 1949, loaded only 5 million tons mechanically. An even smaller amount of coal was cut by machines. The Six-Year Plan forsees a tremendous increase (to 65 percent) in the mechanical cutting and loading of coal. Consequently, in 1955, 65 million tons of coal will be cut and loaded mechanically.

Until now, coal cutting has been done in a semimechanized manner by using coal cutters and high explosives. This process is based on undercutting coal to a depth of 1.5 - 2 meters and obtaining a larger exposed surface. As a result, the effect of high explosives is much greater.

Poland has a whole series of wall coal cutters, and more than a half of the coal in the walls is cut with these machines.

The most common coal cutter in the Polish coal industry is the Polish WLE-40 S type, used in almost all mines. It is series produced by Polish machinery and mining equipment plants.

At present Polish mines are introducing the Soviet MV-60 coal cutter. It has greater power and, in addition, is a basic part of the coal combines, especially the Donbass type.

Beginning with the current year [1950], such combines are in operation or will be installed in a number of mines. The combines cut, crush, and load the coal in one operation.

During the Six-Year Plan, coal cutter-loaders will be put into operation on coal walls. They execute two heavy production processes, partial cutting and loading of coal.

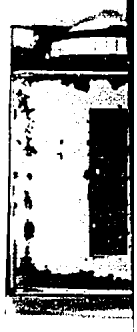
For preparatory work, a new type of coal cutter is being introduced. It will speed up preparatory work and increase productivity at the galleries. This is a coal cutter on caterpillars which can move from one face to another. Beginning in 1951, this coal cutter will be produced by the Polish machine construction plants in such quantities that the requirements of Polish mines will be completely satisfied.

Preparatory work and opening of new galleries will be accelerated by coal cutters and mechanical duckbill coal loaders. Examples of achievements in Polish mines prove that the mechanization of labor can increase labor productivity 5 - 6 times. An example is the 12-meter cut made during one shift by miner Szpigel at the Siemianowice Mine.

Proper preparatory work will guarantee the creation of good working faces. The manufacture of coal combines of the Donbass type -- technical data, specifications, etc., were made available to Poland by the Ministry of the Coal Industry USSR -- and the use of coal cutter-loaders are factors which will increase productivity 2 or 3 times. These factors will also guarantee the achievement of the plan for a 65-percent mechanization of cutting and loading.

Chain conveyers will transport coal from the face to the galleries, and heavy-duty conveyers will automatically load the coal. There are about 200 chain conveyers in use in the Polish coal industry. The Polish machine.

STAT



construction plants manufacture about 100 annually. By the end of the Six-Year Plan, production will be considerably higher. The production of chain conveyers will be sufficient to work the total number of coal walls in Polish mines. Chain conveyers will serve not only to mechanize the transportation of coal in the mines, as foreseen by the plan, but also will eliminate the troublesome and expensive-to-service belt conveyers used in the mines today. Light conveyers, to carry the coal from the galleries, are patterned after Soviet conveyers. Scores of these devices are already in use in the Polish coal industry, and by 1955 Poland will manufacture over 100 of these units annually.

During the Six-Year Plan, Poland will introduce into its coal mines loaders of the Soviet S-153 design. Such loaders are already in operation at some of the Polish mines. In 1955, production of these loaders will amount to several hundred annually.

Recently, the Zabrze Machine Construction Plant (Zabrska Fabryka Maszyn) produced the first loader of the Soviet B-Ch type. With this type loader, shafts are deepened in the USSR on an average of 50 meters; in Poland, shafts are deepened only 25 meters per month because of the antiquated methods used.

The introduction of automatic remote control of conveyers in Polish coal mines (already operating at the Katowice Mine) will enable the transfer of a large number of workers now servicing conveyers to production work at the face. The design for this equipment was also obtained from the USSR.

Transportation is one of the great labor-consuming processes in mining. It will be made more efficient by the introduction of automatic block signals. During the current year, this type of equipment, transferred from mines in the Donets Basin, will be installed at the Polska Mine, and subsequently, at other mines. Automatic coupling of cars will eliminate to a large degree the excessive number of employees engaged in this work at the mine shaft.

The trend of the new technology, apart from automatization and mechanization of production processes, is to convert to larger machines, to accelerate production and servicing processes, and to provide more electrification and better organization of labor. The Six-Year Plan envisages a change to large 2 1/2- and 5-ton cars for the underground transportation of coal in place of the presently used 0.7- and 1 ton cars. The Six-Year Plan also envisages a transition to heavy 14-ton locomotives from the present 5- to 7-ton locomotives, and a reduction in the number of railroad track gauges from 27 to 10.

These improvements in transportation between the face and the shaft are part of the new technology of mining.

The technological process of extracting coal meets with a number of difficulties. The most important of these are:

1. The constant and unavoidable changes in work sites.
2. The limited and, frequently, very small spaces in which the miner and the machine must work.
3. The need of expert direction in supporting roofs.
4. The possibility of fires from spontaneous combustion of coal.

For greater safety, Poland intends to introduce fluorescent lighting in the mines. This type of lighting has already been introduced in one Polish mine.

Poland will introduce new ventilation systems in mines. New methods of roof support are also being worked out. All these improvements will help create better working conditions for miners.

STAT

The mechanization of coal mines is closely connected with electrification. Electric power is ten times cheaper than pneumatic power. It simplifies the serv' ng of machines, facilitates remote control, and creates better health conditions at the face. During the Six-Year Plan, 52 nongaseous mines will be completely electrified. Some of the gaseous mines also will be completely electrified.

The inefficient pillar system, at times causing more than 30 percent loss of coal, will be eliminated in favor of the more economical and productive wall system. A total of 55 percent of all coal will be obtained by the wall system, which will facilitate the mechanized cutting of coal and provide the opportunity to use coal combines. A new system of wall mining thick and steep seams, patterned after that used in the Kuznetsk Basin and devised by Professor Chinkal, will be introduced into the Polish coal mines suited for this system. In 1950, this economic and productive system will be introduced at one of the seams in the Polish coal basin.

During the Six-Year Plan, progress of work on walls will increase from 0.75 to 1.17 meters per shift, and on pillars, from 1.05 to 1.25 meters. Preparatory work will increase from 0.85 to 1.5 meters.

The new technology is being realized and will be realized through the intensive work and expansion of mine machine construction and equipment plants, through the deliveries of machines and equipment from the USSR, through proper utilization of technical data, specifications, etc., supplied to Poland by Soviet engineering institutes, through the organization of construction teams, through an expansion in the work of the Main Scientific Research Institute (Glowny Instytut Naukowo-Badawczy) and the Main Institute of Industrial Safety Glowny Instytut Bezpieczenstwa Pracy), and through the intensification of the activities of the Central Projects Bureau (Centralne Biuro Projektow).

Technology alone is not sufficient; personnel capable of mastering the new technology is necessary. Thus, the struggle for productivity is closely connected with the need for more skilled personnel.

The fourth and the fifth plenary sessions of the PZPR Central Committee gave high priority to the problem of personnel to master the new technology. For this reason new mining faculties at Polish schools of higher education, and workers' polytechnics are being created to supply the coal industry with capable personnel.

- E N D -

STAT